

CLAIMS

What is claimed is:

- 5 1. A bendable polymer tissue fixation device for implantation into a living body, said polymer fixation device comprising a highly porous body, said porous body comprising at least one polymer and a plurality of pores, wherein said porous body is capable of being smoothly bent, with said bending at least partially collapsing a portion of the pores to form a radius curve, said polymer fixation device being suitable for
10 attachment to tissue, and capable of being gradually resorbed by said living body.
2. The polymer tissue fixation device of claim 1 wherein the porous body can be smoothly bent to conform to a tissue structure.
- 15 3. The polymer tissue fixation device of claim 1 wherein said smooth bending is capable of occurring at a temperature below the glass transition point of the polymer.
4. The polymer tissue fixation device of claim 1 wherein the porous
20 body comprises a plurality of porous zones, wherein at least one zone of pores is less able to withstand compressive force than other zones.
5. The polymer tissue fixation device of claim 4 wherein the porous body can be compressed against an irregular surface, whereupon less than all of the pores
25 collapse, and the device conforms to the irregular surface.
6. The polymer tissue fixation device of claim 1 wherein the pores are arranged to yield and selectively collapse to allow for placement of a fastening device to fasten the polymer fixation device within the living body.

7. The polymer tissue fixation device of claim 1 wherein the porous body is capable of being fastened within the living body by means of an adhesive.

5 8. The polymer tissue fixation device of claim 1 wherein the porous body is capable of being fastened within the living body by a fastening device, said fastening device selected from the group consisting of a wire, a staple, a suture, a pin, a nail, a tack, a screw, and a clamp.

10 9. The polymer tissue fixation device of claim 1 further comprising a plurality of holes extending through the prosthesis, said plurality of holes serving as a fastening location.

10. The polymer tissue fixation device of claim 1 wherein the porous
15 body further comprises additional material.

11. The polymer tissue fixation device of claim 10 wherein the additional material further comprises biologically active agents.

20 12. The polymer tissue fixation device of claim 10 wherein the additional material further comprises particulate material, said particulate material being arranged to enable the polymer fixation device to deliver biologically active agents.

25 13. The polymer tissue fixation device of claim 10 wherein the additional material further comprises particulate material, said particulate material being arranged to impart greater rigidity to the tissue fixation device.

14. The polymer tissue fixation device of claim 10 wherein the additional material is radio-opaque.

15. The polymer tissue fixation device of claim 10 wherein the additional material comprises microspheres.

5 16. The polymer tissue fixation device of claim 10 wherein the additional material is distributed throughout the device.

17. The polymer tissue fixation device of claim 10 wherein the additional material is distributed unevenly throughout said device.

10 18. The polymer tissue fixation device of claim 10 wherein the additional material serves to alter the rate of resorption of the polymer fixation device.

15 19. A bendable polymer tissue fixation device for implantation into a living body, said polymer fixation device comprising a composite, said composite comprising a highly porous body and at least one strengthening agent contained therein, said porous body comprising a plurality of pores and being capable of being smoothly bent, wherein said bending collapses a portion of the pores to form a radius curve, said polymer fixation device being suitable for attachment to tissue, and capable of being
20 gradually resorbed by said living body.

20. The polymer tissue fixation device of claim 19 wherein the porous body can be smoothly bent to conform to a tissue structure.

25 21. The polymer tissue fixation device of claim 19 wherein said smooth bending being capable of occurring at a temperature below the glass transition point of the polymer.

22. The polymer tissue fixation device of claim 19 wherein the porous body comprises a plurality of porous zones, where in at least one zone of pores is less able to withstand compressive force than other zones.

5 23. The polymer tissue fixation device of claim 22 wherein the porous body can be compressed against an irregular surface, whereupon less than all of the pores collapse, and the device conforms to the irregular surface.

10 24. The polymer tissue fixation device of claim 19 wherein the pores are arranged to yield and selectively collapse to allow for placement of a fastening device to fasten the polymer fixation device within the living body.

15 25. The polymer tissue fixation device of claim 19 wherein the porous body is capable of being fastened within the living body by means of an adhesive.

20 26. The polymer tissue fixation device of claim 19 wherein the porous body is capable of being fastened within the living body by a fastening device, said fastening device selected from the group consisting of a wire, a staple, a suture, a pin, a nail, a tack, a screw, and a clamp.

25 27. The polymer tissue fixation device of claim 19 further comprising a plurality of holes extending through the prosthesis, said plurality of holes serving as a fastening location.

30 28. The polymer tissue fixation device of claim 19 wherein the porous body further comprises additional material.

35 29. The porous body of claim 28 wherein the additional material further comprises biologically active agents.

30. The porous body of claim 28 wherein the additional material further comprises particulate material, said particulate material being arranged to enable the polymer fixation device to deliver biologically active agents.

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31. The porous body of claim 28 wherein the additional material further comprises particulate material, said particulate material being arranged to impart greater rigidity to the tissue fixation device.

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32. The porous body of claim 28 wherein the additional material is radio-opaque.

33. The porous body of claim 28 wherein the additional material comprises microspheres.

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34. The porous body of claim 28 wherein the additional material is distributed throughout the device.

35. The porous body of claim 28 wherein the additional material is distributed unevenly throughout said device.

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36. The porous body of claim 28 wherein the additional material serves to alter the rate of resorption of the polymer fixation device.

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37. The polymer tissue fixation device of claim 19 wherein the strengthening agent is biodegradable.

38. The polymer tissue fixation device of claim 19, wherein the strengthening agent is arranged in the form selected from the group consisting of a mesh, a weave, a knit, and a random arrangement of fibers.

5 39. The polymer tissue fixation device of claim 1, further comprising a first layer having a first pore density, a second layer having a second pore density, and a third layer having said first pore density, with a transitional interface between the adjoining layers.

10 40. The polymer tissue fixation device of claim 19, further comprising a first layer having a first pore density, a second layer having a second pore density, and a third layer having said first pore density, with a transitional interface between the adjoining layers.

15 41. The polymer tissue fixation device of claim 1, further comprising a first layer having a first pore density, a second layer having a second pore density, and a third layer having a third pore density, with a transitional interface between the adjoining layers.

20 42. The polymer tissue fixation device of claim 19, further comprising a first layer having a first pore density, a second layer having a second pore density, and a third layer having a third pore density, with a transitional interface between the adjoining layers.

25 43. A bendable polymer tissue fixation device for implantation into a living body, said polymer fixation device comprising a laminar body, said laminar body having an first layer, a second layer and an interface, said first layer comprising a highly porous form of a polymer material, said second layer comprising a non-porous form of said polymer material; said polymer material comprising a polymer, said porous form comprising a plurality of pores, said porous form transitioning to the non-porous form at

said interface, said laminar body being capable of being smoothly bent, wherein said bending collapses a portion of the pores of the porous form to prevent cracking or breaking of the non-porous form.

5 44. A bendable polymer tissue fixation device for implantation into a living body, said polymer fixation device comprising a laminar body, said laminar body having an first layer, a second layer and an interface, said first layer comprising a highly porous form of a first polymer material, said second layer comprising a non-porous form of a second polymer material; said first and second polymer materials comprising
10 polymers, said porous form comprising a plurality of pores, said porous form transitioning to the non-porous form at said interface, said laminar body being capable of being smoothly bent, wherein said bending collapses a portion of the pores of the porous form to prevent cracking or breaking of the non-porous form.

15 45. The polymer tissue fixation device of claim 11, wherein at least a portion of said biologically active agent is located within at least a portion of said pores.

 46. The polymer tissue fixation device of claim 11, wherein at least a portion of said biologically active agent is located within the polymer of said polymer
20 fixation device.

 47. The polymer tissue fixation device of claim 1, further being capable of being cut using surgical scissors.

25 48. The polymer tissue fixation device of claim 1, further being capable of being cut out of a large sheet of similar material by a punching operation.

 49. The polymer tissue fixation device of claim 1, wherein the porous body is capable of being smoothly bent without the need for heating.

50. The polymer tissue fixation device of claim 1, wherein the porous body is capable of being smoothly bent without the need for special tools.

5 51. A deformable polymer tissue fixation device for implantation into a living body, said polymer fixation device comprising a porous body comprising at least one polymer, wherein the porous body comprises a plurality of porous zones, further wherein at least one of the zones is less able to withstand compressive force than at least one other zone such that the porous body can be compressed against an irregular surface,
10 whereupon less than all of the pores collapse, and the device conforms to the irregular shape, with said polymer fixation device being suitable for attachment to tissue, and capable of being gradually resorbed by said living body.